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AN INCUBATOR FOR STUDENT USE.

By VERANUS A. MOORE.

WITH PLATE VIII.

Among the difficulties attending the teaching of bacteriology is the selection of incubators suitable for student use. The majority of those now catalogued by the trade are too small to accommodate a large class. In our most elementary course it has been found necessary for each person to have not less than eighty square inches of shelf room for the boxes or stands for holding test-tube cultures, Petri dishes, and fermentation tubes. In fitting up our student laboratory this necessity was in a measure anticipated and two large incubators built on the Weisnegg pattern were provided. These were found to afford ample shelf room for our present classes, but the difficulty of utilizing the rear half of each shelf soon became apparent. The shelves were necessarily too close together to enable one to reach over cultures standing in the fore part and the result was, that, notwithstanding our cautioning and the intelligent care on the part of the student, it not uncommonly happened that cultures were misplaced, or worse still, pushed from the shelves to the floor with the attending consequences.

In order to overcome the confusion, accidents, and annoyance to students in having their cultures misplaced or perhaps destroyed by others in removing those in their rear, the desirability of constructing individual apartments suggested itself. A number of devices were considered, but the one about to be described seemed to be, all things considered, the most practicable. It consists simply of a chest of drawers very much after the Lillie paraffin-oven pattern which are placed within the incubator, each drawer being of sufficient size to furnish storage

for the working cultures of one student. Their use removes all possible excuse for any person meddling with the cultures of others, and they afford convenient trays in which to transfer cultures from incubator to work table and *vice versa*.

The Weisnegg incubators are heated by gas "microbe" burners, placed underneath, the heat being radiated from a metal plate at the bottom and one at the top and the metal tubes connecting them. The tubes are arranged at the two sides and back, and are placed close to each other (see Fig. 1). This arrangement gives lateral heat quite as much as a water jacketed incubator. The shelves with the standards supporting them as seen in Fig. 1 were removed, and in their place the frame work for the drawers was fastened (Fig. 3), leaving a narrow space on all sides.

The drawers were made from sheet zinc with a wooden front. Each drawer is 49 centimeters long, 10.5 centimeters wide and 19 centimeters deep. The sides and rear end are perforated, which allows quite free passage of air. The ends are soldered and the perforations are sufficiently high from the bottom to allow the drawer to hold the cultures if the tubes should, for any reason, break. The drawers can be easily cleaned and disinfected.

The board on the front end of each drawer closes the front of the incubator so that the opening of the door affects the temperature but very little. The drawer is provided at the top with a narrow flange which runs in a metal groove and in which the drawer is supported. The grooved strip is imbedded in the frame work. On the front end of each drawer is an inexpensive but convenient pull which is also provided with a frame for a card on which is written the name of the person who is to use it.

In regulating these the Roux bimetallic regulator is used. It is inserted at the back rather than near the center of the side, as shown in Fig. 1. The size of the drawers might possibly be better if a trifle larger, but as we desired to use the incubator already built, and also to provide for the maximum

number of students, the area of each drawer was reduced to the minimum.*

I am indebted to Mr. Henry Bool, who built the drawers, for his skill in minimizing the space occupied by the frame work, and to Mr. Raymond C. Reed of this department for the photographs used in the illustrations.

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* The incubators have been used for a term of six months since the presentation of this paper. They have fulfilled in every respect all that was expected of them, and as yet no objections to such an arrangement has been found.

PLATE VIII.**EXPLANATION OF FIGURES.**

- Fig. 1. Photograph of incubator as originally built.
Fig. 2. “ “ “ with apartment drawers completed.
Fig. 3. “ “ “ with frame work for drawers.
Fig. 4. “ “ “ drawers showing different views.

PLATE VIII

